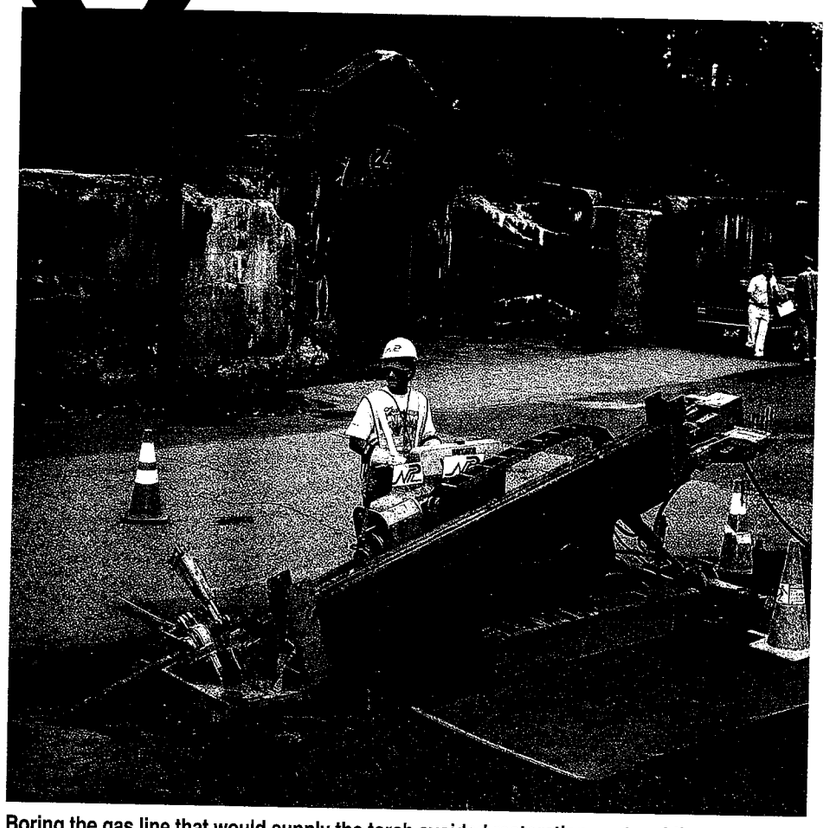
6 TRENCHLESS Application Stories



Boring the gas line that would supply the torch avoided restoration cost and time.

Trenchless teamwork tenders torch

WHEN CONNECTICUT WAS selected to host the 1995 Special Olympics, organizers approached businesses in the state for dollars and in-kind contributions. For several gas utilities, the most logical contribution was to design and fabricate the Olympic torch, and provide the fuel to light it.

The traditional torch structure is a cauldron containing the gas burner, with a supporting column to raise the cauldron far above the stadium. For the Special Olympics, a 49-foot-9-inch column was placed on a platform at the top of the Yale Bowl in New Haven, with the cauldron positioned atop.

The question of how to supply gas for a flame at such a height was addressed early in the project. The consortium considered bottled gas, but the desired size of the flame would have required changing tanks every day. They decided to install natural gas, instead.

Providing gas to the site meant running a 2-inch gas pipe more than 2,000 feet from the main to the base of the stadium wall, then strapping the line to the wall and running it up to the platform.

Northern Pipeline Construction was chosen to install the gas line. When the gas consortium and Northern Pipeline began installation in mid-June, they knew they had less than three weeks before the event.

The gas line, however, would have to go through one of the site's most congested areas. Digging an open trench to install the gas line would mean tearing up lawns, landscaping and pavement, then restoring them before the opening ceremonies. The schedule clearly would allow no time for restoration. The group decided to go with directional boring, which would take only four days.

Northern Pipeline used a Vermeer D-24, boring 1,200 feet with each setup.

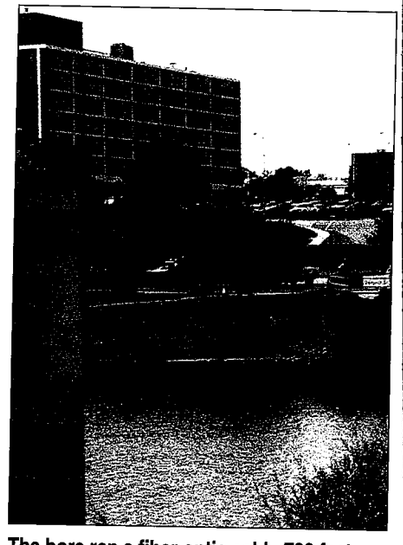
The Yale Bowl site presented difficult conditions. The tightly compacted, sandy, rocky soil would not hold a hole well. To counter this, the crew injected bentonite slurry into the bore, ensuring stability. Since excess bentonite is easily vacuumed, cleanup was minimal.

Write 082 on Reader Service Card

Under the river bore

Getting under busy roads and through landscaped residential areas are the most common uses for underground directional bores. There are, however, more dramatic applications.

When Mid States Utilities, White Cloud, Michigan, contracted to run a fiber optic line across the St. Joseph River in Benton Harbor, Michigan, the company opted to use directional boring. The river was about 300 feet wide at the jobsite, and 24 feet deep. The cable was to be placed at least 20 feet below the river bed.



The bore ran a fiber optic cable 720 feet across the St. Joseph River in Benton Harbor, Michigan.

Mid States allowed vendors to demonstrate a 1510 Straightline drill and the Digi Trak locator on the job.

Once on site, Mid States determined the bore would have to be deeper than initially thought, primarily because of a 28-foot grade change from the machine setup area to the water's edge. Thirty five foot deep steel girders, placed for erosion control on the shore, further complicated the situation. The crew found themselves 77 feet deep by the time they reached the river's midpoint, yet they could still track the borehead, which had a 50 foot rod transmitter, with the Mark V Digi Trak.

Despite these unforeseen problems, after two days and nine hours of pilot bore, crews completed the 720 foot cavity.

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Old pioneer leading new revolution

Home based interactive communications will revolutionize the way we send and receive information. Two counties near Atlanta will be among the first to enter the fray.

BellSouth is using a trial project to provide 12,000 families in Chamblee and Dekalb counties with:

- broadcast and cable entertainment;
- on demand video;
- high-speed computer services;
- interactive TV; and
- consumer transactions.

The trial involves installing a broadcast network of fiber optic and coaxial cable. BellSouth is also installing system power nodes, bypassing the local electrical utility.

While most of the project's cable placements used existing utility poles, 10 percent had to be placed underground, work that fell to Ansco & Associates, Atlanta.

Ansco had several challenges with the job. One, the company was given four weeks to complete the project. Two, they had to contend with congested utility easements, elaborate landscaping and short, narrow lots. Third, they had to bore through ground with broken chunk rock. Fourth, workers had to endure one of the hottest summers on record.

To alleviate these conditions, Ansco used directional boring equipment for virtually all of the project's underground installation work. In addition to increasing production to meet the tight deadline, Ansco felt directional boring would reduce customer complaints.

Ansco has a lot of directional boring under its belt. It was the directional boring pioneer for BellSouth, doing the first directional boring work in the Atlanta area. On this project, Ansco used more than 20 Ditch Witch trenchless products, including the new JT820 Jet Trac.

"The underground installation of BellSouth's new broadband network has once again confirmed the overall value of directional boring," says Ansco President Steven Nielson. "We have worked and bored around congested utility easements, dramatic changes in elevation, and in all kinds of twists and turns to get the job done."

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Damage to yards and landscaping was minimized using self-contained directional boring systems, which allowed the contractor to work in tight areas.

Airport safety installed

The Donaldson Center Airport in Greenville, South Carolina, needed to install an emergency alarm signal from a hanger security gate to the fire station located on the other side of the center's most traveled road. Representatives from the center asked McLaughlin Boring Systems for help.

The Hole Hammer penetrates the ground, resurfacing about an hour later.

Since the company is located at Donaldson Center, it was familiar with the thick red clay soil conditions in the area. It recommended an McL-225 Hole Hammer piercing tool for the best results.

After E&M Pipeline, also located at Donaldson Center, dug a starting trench on the gate-side of the road, the bore began. Crews attached a special housing containing a standard probe transmitter between the whip hose of the piercing tool and the air supply hose for accurate depth and location of the bore.

Using a portable air compressor, the E&M Pipeline crew began boring at approximately 3:00 p.m. and entered the receiving pit on the far side of the road just one hour later. The workers were able to disconnect the boring tool from the air hose and use the air supply line to pull back the conduit.

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Highway no barrier for Utilx

Utilx faced two obstacles when installing a 1,500-foot, 8-inch gas main

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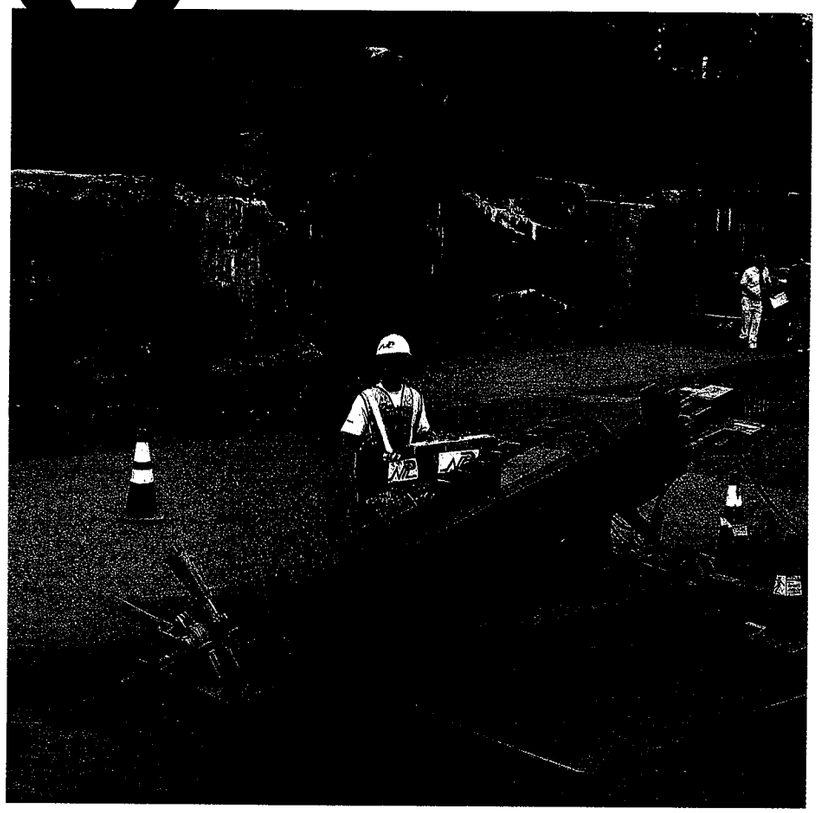

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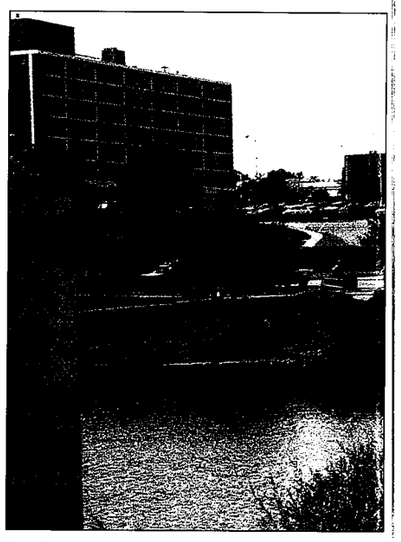

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Crews drilled 12 feet under the Pacific Coast Highway to avoid stopping traffic on the busy road.

for San Diego Gas & Electric: the busy stretch of California's Pacific Coast Highway separating San Diego from San Diego International Airport, and a railroad track. The utility had first considered open-trenching with a jack-and-bore crossing. It then decided to directional drill the job because of cost, convenience and a desire to avoid shutting down the busy road.

"Open-trenching would have required night work to cross Pacific Highway. We would have had to close one lane after another," says Terry DeVore, gas foreman at SDG&E. "Directional drilling was the only way to go."

Utilx used a compact FlowMole Series-F drill, which required closure of one lane.

The most difficult part of the run — a 650-foot stretch under the highway and tracks — required drilling downhill while pulling the product pipe uphill. To avoid surface subsidence, the crew drilled 12 feet under the railroad tracks, then went deeper to avoid utilities under the highway before surfacing on the other side. Despite the unforeseen complication of an old brickyard lying under the tracks, the pipe emerged from the bore with its coating intact.

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Pipe-ramming job eases pump installation

To continue mining operations within a specified area, Kennecott Utah Copper needed a pump to remove groundwater at its Magma, Utah, site. Kennecott specified a 100- to 150-foot-deep bore for the job. Unfortunately, geological reports indicated bedrock might be encountered after 50 feet.

Kennecott hired Webber Drilling of Salt Lake City to create the bore. They soon discovered they didn't have the right tool for the task. Only 40 feet into the job, there wasn't enough down-thrusting pressure from the auger drilling rig to break through the bedrock. The project came to a standstill.

Webber immediately started looking for alternatives, turning to Helm and Sons, Murray, Utah.

They called and said, "We're in a bind. Can you help us out?" recalls Bob Helm. He recommended using a pneumatic pipe-ramming tool to install the 36-inch diameter casings. Once the required depth was reached, Webber could auger out the dirt and rock from inside the casing and install the pump.

"Designing an adapter to fit the end of the casing was challenging," said Helm, referring to the custom device required to modify the traditionally horizontal tool for a vertical configuration. "We ended up making a 1-1/2-inch-thick plate with a hole in the center where the rammer was positioned. The plate sat flat against the pipe with tabs welded on the inside to prevent lateral movement."

Helm selected a Grundoram Goliath pipe-ramming tool from his arsenal of trenchless tools, made by TT Technologies. It has a diameter of 18 inches and air consumption of up to 1,236 cfm. Although the company had done several horizontal installations of this magnitude, this would be a record vertical installation.

With the tool suspended above the work area, crews lowered the first section of pipe into the hole. Each subsequent pipe section would then be welded to the preceding piece and driven in.

At approximately 70 feet, the pipe made contact with cobble just above bedrock. The ramming continued until they reached solid bedrock at about 100 feet. The mining company deemed this satisfactory, and the installation was complete.

The entire ram was completed in just two days. Actual ramming time came in at only four hours, with the remainder of the time in setup and welding. Webber augered out the pipe, installed a perforated 12-inch-inside-diameter PVC pipe (18 inches outside diameter), which was surrounded by gravel within the casing. The 36-inch pipe was then removed from the ground and the pump was placed in service.

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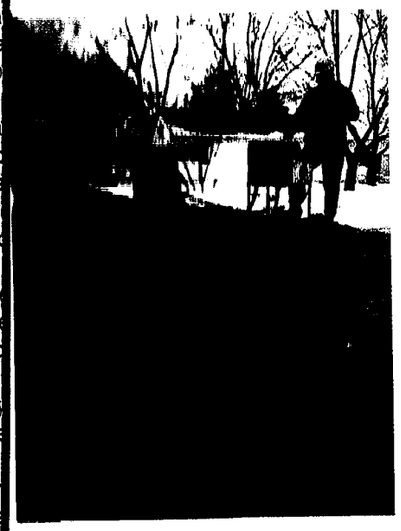
A record-setting vertical ram was achieved in Magma, Utah.

TRENCHLESS PRODUCTS



XPANDIT TRENCHLESS PIPE REPLACEMENT

Miller Pipeline offers the Xpandit pipe replacement system, a hydraulically operated method providing a vibration free way to expand and break away existing pipe, pushing it into the surrounding soil. New pipe is then pulled directly into the resulting space. This system can be used to replace deteriorated water and sewer pipe, including vitrified clay, cast iron, asbestos, cement, concrete, PVC and steel pipe.

MILLER PIPELINE

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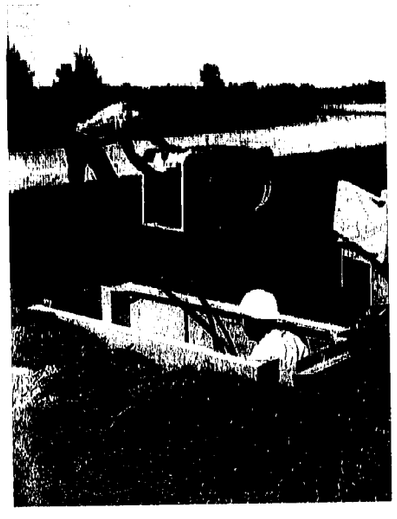

New from ... Charles Machine Works

JT2320 DIRECTIONAL DRILL

The Ditch Witch JT2320 Jet Trac Directional Boring System boasts a 58-horsepower John Deere engine that delivers 17,000 pounds of thrust and 20,000 pounds of pullback power for installing service lines up to 14 inches in diameter, depending on soil conditions. The spindle operation is geared for big jobs as well, with 1,300 pounds-feet of torque at up to 150 rpm. Separate hydraulic circuits for spindle rotation and carriage thrust assure continuous performance for both functions.

Write 061 on Reader Service Card

LOCATING SYSTEMS

Weighing 4.3 pounds, the Ditch Witch Subsite 75R/75T service line locating system is lightweight for easy handling on site. It operates on standard C and D batteries. Its LCD panel features a signal strength bar graph and color-coded control buttons are arranged in a semicircle within thumb's reach. Three detection modes are available, including active, passive and beacon.

Write 060 on Reader Service Card

GAS-POWERED HYDRAULIC RACKS

Poweram has added diesel-powered units to its existing line of gas-powered portable hydraulic power racks. All units come with skid frames, electric starters and flush-face quick couplers. Also included are hydraulic oil cooler with by-pass relief, safety relief valve, magnetic suction filter and high-return line filter protection.

POWERAM

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TRENCHLESS